IN THE SPECIFICATION

Please amend paragraphs [0002], [0003], [0010], [0024], [0030], [0038], [0041], and [0052] – [0056] :

[0002] ~~As the~~ A surface inspection apparatus, which inspects the surface of the object under inspection optically, a scattered light detection type or a reflected light detection type, in which the surface of the object under inspection is illuminated by a inspection light and a scattered light or a reflected light from the surface of the object under inspection is detected, is generally known (~~the~~ See Japanese Patent Laid-Open 2001-66263, for example). The scattered light detection type and the reflected light detection type are suitable for measuring shapes, sizes, etc. of the defects on the surface of the object under inspection.

[0003] There is also an interference phase detection type, in which a reference surface and the surface of the object under inspection are illuminated by divided inspection lights, and the interference between a reflected light from the reference surface and a reflected light from the surface of the object under inspection is detected (~~the~~ Japanese Patent Laid-Open 2000-121317, for example). The interference phase detection type is suitable for measuring heights, depths, etc. of the defects on the surface of the object under inspection. It is also utilized for measuring thicknesses of semiconductor wafers, etc. (~~the~~ Japanese Patent Laid-Open 2000-234912, for example).

[0010] After inspecting the surface of the object under inspection optically, the X-ray analyses are performed on the defects either automatically with a program, ~~automatically~~ or by directions from an operator. Since the X-ray analyses on the defects are performed based on the positions of the defects and the features or the classification results of the defects, which are detected by an optical inspection, it becomes possible to perform analysis works efficiently. ~~And it~~ It also becomes possible to ~~prove~~ determine the substances of the foreign matters, such as the particles, stains, etc., which are adhering to the surface of the object under inspection, from X-ray analysis results of the defects.

[0024] The optical inspection unit 30 is the same as that of conventional surface inspection apparatuses. It comprises optical systems of the scattered light detection type and the reflected light detection type, which are described in ~~the~~ Japanese Patent Laid-Open

2001-66263, for example, or an optical system of the interference phase detection type, which is described in ~~the~~ Japanese Patent Laid-Open 2000-121317, for example, or both.

[0030] After inspections by the optical inspection unit 30 and above-mentioned processes by the processing unit 20 are completed ~~about~~ as to the whole surface of the magnetic disk 1, the MPU 21 runs a defect map display program 22c, which is stored in the memory 22. The MPU 21 makes a defect map from the coordinate position data of the defects and the classification result data of the defects, which are memorized in the memory 22, and displays it on a display device 25 (Step 105).

[0038] The MPU 21 displays the picture images, which are detected by the optical microscope 40 and input through the interface 23e, on the display device 25. The operator observes the picture images of the picked defects ~~displays~~ displayed on the display device 25 (Step 112).

[0041] Figure 4 is a schematic view showing an example of the X-ray inspection unit in the surface inspection apparatus according to the present invention. The X-ray inspection unit 50 comprises a X-ray tube 51, a spectroscopic device 52 and a X-ray detector 53. The X-ray tube 51 generates primary X-rays, which are radiated to the surface of the magnetic disk 1. The spectroscopic device 52 has a barrel-type cylindrical shape, whose center portion swells as the section is shown in Figure 4. It carries out the Bragg reflection only on the primary X-rays, which come into its inner surface with a predetermined incidence angle, and directs them to the surface of the magnetic disk 1. When the primary X-rays are radiated, atoms on the surface of the magnetic disk 1 are excited, and fluorescent X-rays 3 are generated. The X-ray detector 53 detects the fluorescent X-rays 3, which are generated from the surface of the magnetic disk 1. ~~About a~~ A spectroscopic apparatus and a X-ray analysis apparatus, ~~the~~ such as that shown in Japanese Patent Laid-Open 2001-133421 is known.

[0052] When the defects, ~~about~~ for which the marking should be performed, are picked, the MPU 21 runs a defect position marking program 22h, which is stored in the memory 22. Under the control of the MPU 21, the position control circuit 27 drives the traveling mechanism 13 so that the magnetic disk 1 is placed under the marking unit 60. Instead of the traveling mechanism 13, the magnetic disk 1 may be placed under the marking unit 60 by

mounting it on another inspection stage, which is located under the marking unit ~~50~~ 60, using a handling mechanism that is not illustrated.

[0053] Next, among the coordinate position data and the classification or re-classification results data of the defects, which are memorized in the memory 22, the MPU 21 outputs the coordinate position data and the classification or re-classification results data of the picked defects to the marking unit 60 through the interface 23h. The marking unit 60 puts marks, which indicate the positions and the classification or re-classification results of the picked defects, on the surface of the magnetic disk 1 based on the input coordinate position data and the input classification or re-classification results data of the defects. The marks put on the surface of the magnetic disk 1 are ~~utilizes~~ utilized when performing further analyses in detail using a scanning electron microscope (SEM) or a atomic force microscope (AFM), for example.

[0054] Moreover, the surface inspection apparatus can select the defects, ~~about~~ for which the marking should be performed, automatically. In this case, a program for selecting the defects, about which the marking should be performed, is added to the memory 22. The MPU 21 runs the added program and selects the defects, ~~about~~ for which the marking should be performed~~. And~~ the marking is performed ~~about~~ for the selected defects ~~just like~~ as in the case ~~where~~ in which the operator picks the defects.

[0055] Although the above-mentioned example explains a case of performing ~~the~~ an X-ray analysis on ~~the~~ a particle, which is adhering to the surface of the magnetic disk 1, substances of other foreign matters, such as stains, etc., can be also proved by performing the X-ray analysis. Moreover, when layers formed on the surface of the magnetic disk, such as a magnetic film, a protective film, etc., have a damage, such ~~a~~ as scratches etc., it is possible to judge which layer is exposed by performing the X-ray analysis.

[0056] The present invention is not restricted to the magnetic disk but is also applicable in inspecting defects on surfaces of various things, such as a semiconductor wafer, a liquid crystal substrate, etc.